
Space Weather Forecast

Issued on Saturday, 15 June 2024 at 00:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Minor Geomagnetic storm Day 1 into Day 2 (15-16 Jun). Isolated Moderate flares (R1-R2 radio blackouts) likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate with one isolated Moderate class flare, peaking at 14/0432 UTC. There are currently eight sunspot regions on the visible disc. The largest and most significant region is situated in the southeast disc and was responsible for the Moderate flare. This region is magnetically complex and continues to develop in size and complexity. Two other regions, both in the eastern hemisphere, have also shown development. The other regions are relatively small and simple.

No Earth directed Coronal Mass Ejections (CME's) were observed during the period.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow regime. The speed was slow-ambient and generally stable, varying between 300-370 km/s. The IMF (Interplanetary Magnetic Field) was weak throughout. The important north-south component was predominantly southward. Geomagnetic activity was Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The high energy (greater than 10 MeV) proton flux has remained below the S1/Minor storm threshold and has been declining through the period, returning to background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Further isolated Moderate class flares are likely, with just a slight chance of Strong flares. Any significant flares most likely from the two larger and more complex regions in the southeast. No new significant regions are expected to rotate onto the visible disc during the period.

Solar Wind / Geomagnetic Activity: A faint Coronal Mass Ejection (CME) associated with a Moderate flare at 12/2246 UTC is now expected to have an Earth directed component, possibly reaching Earth later on Day 1 or into Day 2 (15-16 Jun). Confidence is low regarding the arrival time and impact. A weak enhancement from a coronal hole feature may connect to Earth on Day 3 (17 Jun) with solar winds increasing to slightly elevated levels.

Overall, geomagnetic activity is expected to remain Quiet (Kp0-2) initially, before increasing later Day 1 into Day 2 (15-16 Jun) upon arrival of the forecast CME to Active or G1 (Kp4-5), with perhaps a slight chance of reaching Moderate/G2 (Kp6). Geomagnetic levels then Quiet to Unsettled (Kp1-3) for the remainder of the period with a chance of isolated Active (Kp4) intervals associated with the arrival of any coronal hole enhancement.

Energetic Particles / Solar Radiation: High energy proton flux is expected to continue to decline over the coming days, remaining below the S1/Minor storm levels. The chance of enhancement remains low.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	50	30	5	2
Strong	G3	No	5	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	50	60	60	60
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)